

ABSTRACT

A premix secondary fuel nozzle for use in transferring a flame from a first combustion chamber to a second combustion chamber is disclosed. The secondary fuel nozzle
10 includes multiple fuel circuits, each of which are fully premixed, and neither of which are injected in a manner to directly initiate or support a pilot flame, thereby lowering emissions. Multiple embodiments are disclosed for alternate configurations of a first fuel injector, including an annular manifold and a plurality of radially extending tubes. Alternate premix secondary fuel nozzles are also disclosed incorporating improved tip
15 cooling schemes that reduce the amount of cooling flow and increase the local heat transfer effectiveness. Reduced cooling flow to the tip region helps to improve flame stability and lower combustion dynamics by eliminating unnecessary cooling air from the fuel nozzle recirculation zone.